Attorney Docket No.: C4265(C)
Serial No.: 10/535,485
Filed: May 17, 2005
Confirmation No.: 3943

DECLARATION

Under 37 CFR § 1.132

Sir:

I, Andrew Phillip Parker hereby declare that:

I am familiar with column 5, lines 1-51 discussed in Ruppert et al (US 4,441,881), and page 58, examples 27-32 discussed in Bettiol et al (WO 00/65015) and how they compare to the claims as now amended in the above-identified application.

I received my Chemistry degree from the University of Liverpool in the United Kingdom in the year 1987.

I joined my present employer Unilever in 1988, and I currently have the title Research Scientist, in the Laundry Department located in Unilever R&D, Port Sunlight, Quarry Road East, Bebington, Merseyside, CH63 3JW, UK

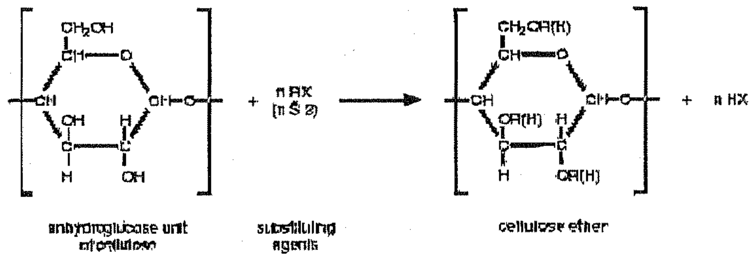
I am familiar with the Office Action dated April 19 2007 in the above captioned case where claim 10 was rejected under 35 U.S.C. 103(a) as being unpatentable over Ruppert et al (US 4,441,881) in view of Bettiol et al (WO 00/65015).

The following is a discussion of the technical attributes and differences between the instant case and the cited references in light of the experimental findings disclosed in the instant specification.

1. Variation of viscosity with molecular weight

The text below is a publicly available extract taken from "Cellulose Ethers" by Ray Will and Uwe Loechner and Kazuo Yagi - Published July 2004:

"Cellulose ethers are high-molecular-weight compounds produced by replacing the hydrogen atoms of hydroxyl groups in the anhydroglucose units of cellulose with alkyl or substituted alkyl groups.



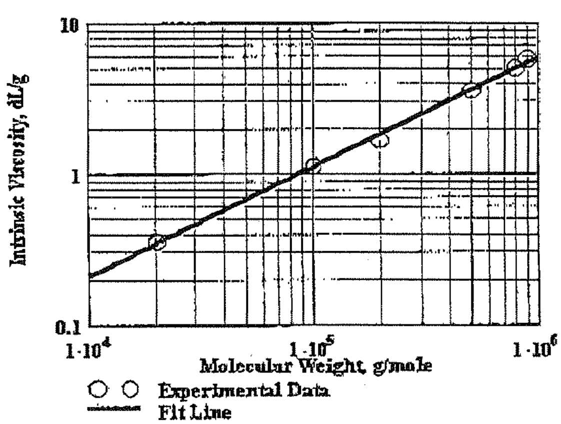
where R can be	CH_3	methyl
(as the sole substituent or	CH_2COONa	sodium carboxymethyl
in combinations)	CH_2CH_3	ethyl
	CH_2CH_2OH	hydroxyethyl
	$CH_2CH(OH)CH_3$	hydroxypropyl
	$CH_2CH_2CH_2(OH)CH_2$	hydroxybutyl

The commercially important properties of cellulose ethers are determined by the molecular weight of the cellulose used, the chemical structure and distribution of the substituent groups, and the DS (degree of substitution) and MS (molar substitution) (where applicable). These properties generally include solubility, viscosity in solution, surface activity, thermoplastic film characteristics, and stability against biodegradation, heat, hydrolysis and oxidation. **Viscosity in solution varies directly with molecular weight.**"

This relationship is described by the Mark-Houwink equation:

$$[\eta] = K\,M^a$$

Where 'η' = intrinsic viscosity, 'K' and 'a' are Mark-Houwink constants that depend on the polymer, solvent and the temperature of the viscosity determination. A typical plot is shown below:



2. Colour Benefit – Molecular Weight relationship

Data taken from table 1 of our US patent application (with viscosity and molecular weight of materials added). Molecular weights provided by Dow.

Example	'Cellosize' Hydroxy Ethyl Cellulose (HEC)	HEC Mol. Wt. (Daltons)	HEC Viscosity range (cP)	Delta L
Control	None	-	-	10.09
1a	EP09	50,000	90-160 cP (5%)	8.78
1b	QP40	100,000	80-125 cP (2%)	8.81
1c	QP300	200,000	300-400 cP (2%)	8.02
1d	QP4400H	470,000	4800-6000 cP (2%)	8.53
1e	QP10000H	600,000	6000-7000 cP (2%)	9.04
1f	QP15000H	750,000	1100-1500 cP (1%)	9.58
1g	QP30000H	1,000,000	1500-2400 cP (1%)	8.23
1h	QP52000H	1,200,000	2400-3000 cP (1%)	7.94
1i	QP100MH	1,400,000	4400-6000 cP (1%)	8.08

Lower Delta L = reduced fading (the lower the Delta L value, the better the colour benefit is)

The table above shows how the colour care benefit varies with molecular weight. The optimum benefit can be clearly seen at 200,000 Daltons, and between 1,000,000 and 1,400,000 Daltons.

3. Particulate Stain Negatives

Table 4 of our US patent application shows the effect of the molecular weight of the HEC material upon the ability to remove particulate stains.

'Cellosize' Hydroxy Ethyl Cellulose (HEC)	HEC Viscosity range (cP)	ddE
Control (No HEC)	-	16.92
200,000 mol.wt.(Cellosize QP300)	300-400 cP (2%)	9.32
470,000 mol.wt. (Cellosize QP4400H)	4800-6000 cP (2%)	6.38
1,400,000 m.wt. (Cellosize QP100MH)	4400-6000 cP (1%)	5.58

The lower the ddE value, the worse the particulate stain removal was.

The above results show the degree of particulate soil removal as a function of molecular weight of the HEC material (larger ddE values indicates better particulate soil removal). As molecular weight increases, the degree of stain removal decreases – showing that stain removal is disadvantaged for the high molecular weight HEC materials.

In view of the correlation between viscosity and molecular weight of the HEC materials (from Will, Loechner and Yagi) discussed above) the data in the instant specification shows that the HEC materials covered by applicant's current amended claim 1 (to a HEC material with a mol. wt. of 200,000 – 300,000 Dalton and having a viscosity of 200-300 cP @ 2%) provide a colour care benefit, but with reduced negatives in terms of particulate soil removal.

4. HECs in the Art

US 4,441,881 (Ruppert) teaches hydroxylalkyl celluloses (hydroxy propyl cellulose especially) with a molecular weight of between 80,000 and 90,000 Daltons with a viscosity of 4,000 (not told how it is measured). It can be assumed that the data for Cellosize EP09 and Cellosize QP 40 included in the patent would be a fair reflection of the material of Ruppert, at least in terms of molecular weight.

Table 1 shows that the Delta L values for EP09 and QP40 are much higher than for QP300. Thus EP09 and QP40, which are very similar to the hydroxyalkyl celluloses taught in Ruppert, do not produce as good colour care benefits as the HEC materials presently claimed.

WO00/65015 (Bettiol) discloses the use of three grades of HEC with molecular weights of 90,000 (90K – from Aldrich), 1,300,000 (1300K – from Aldrich) and 720,000 (Natrasol 250MR) – see references cited below.

These grades fall outside the "sweet spot" giving a balance of colour benefits without the disadvantage of reduced particulate soil removal.

Aldrich 90K
The properties of the low molecular weight HEC Aldrich 90K material (mol. wt. 90,000 Daltons, viscosity 75-150 cP (2%)) is believed to be fairly reflected in table 1 by the values for Cellosize EP09 (mol. wt. 50,000 Daltons, viscosity 90-160 cP (5%)), and Cellosize QP 40 (mol. wt. 100,000 Daltons, viscosity 80-125 cP (2%)).

Table 1 shows that the colour benefit for such a material is far below that of the 200,000 Daltons (QP300) material, and for the 1,000,000 - 1,400,000 Daltons materials (QP 30000H, QP52000H and QP100MH).

Aldrich 1300K
The properties of the high molecular weight HEC Aldrich 1300K material (mol. wt. 1,300,000 Daltons, viscosity 3,400-5000 cP (1%)) is believed to be fairly reflected in tables 1 and 4 by the values for Cellosize QP100MH (mol. wt. 1,400,000 Daltons, viscosity 4400-6000 cP (1%))

Table 1 shows that there is a colour benefit for such a material, approximately the same as for HEC material with a mol. wt. of 200,000 Daltons.

However, table 4 clearly shows the negative with regards to reduced particulate stain removal for the high molecular weight material. This is much higher than for the HEC material as claimed in amended claim 1.

Natrosol 250 MR
The properties of the medium/high molecular weight HEC Natrosol 250 MR material (mol. wt. 720,000 Daltons (viscosity 4,500-6500 cP @ 2%) is believed to be fairly reflected in tables 1 and 4 by the values for Cellosize QP15000H (mol. wt. 750,000 Daltons, viscosity 1100-1500 cP @ 1%)

Table 1 shows that there is no colour benefit for such a material, the values for Delta L being much higher than for the HEC material as claimed in the instant case.

Table 4 would also indicate that there is present the negative with regards to reduced particulate stain removal for the high molecular weight material. The molecular weight of Natrosol 250 MR (720,000 Daltons) falls between the values for Cellosize QP 4400H (470,000 Daltons) and Cellosize QP100MH (1,400,000 Daltons), which both have poor particulate stain removal values.

4. Conclusion

Surprisingly, from the results obtained, it became clear that there is a very narrow range of HEC polymers that provide a colour care benefit without causing particulate stain removal issues. This range is the 300-400 cP viscosity range (2% aq.) - this includes materials such as Cellosize QP300 and Tylose H300, which have molecular weights between 200,000 and 300,000 Daltons.

Although the use of HEC is disclosed in other patents, there is no information that would indicate that there are detergency issues with high molecular weight HEC materials, nor that low molecular weight HEC materials (i.e. below 100,000 Daltons) provide insignificant colour care benefits.

Thus, it is respectfully submitted that our criteria of using such specific HEC materials within a narrow molecular weight and viscosity range is non-obvious over the cited documents.

References Cited

Abstract of "Cellulose Ethers" by Will, Loechner and Yagi
http://www.sriconsulting.com/CEH/Public/Reports/582.5000/

Online specification sheet from Aldrich for 90K
http://www.sigmaaldrich.com/catalog/search/ProductDetail/ALDRICH/434965
http://www.sigmaaldrich.com/catalog/search/SpecificationSheetPage/ALDRICH/434965

Online specification sheet from Aldrich for 1300K
http://www.sigmaaldrich.com/catalog/search/ProductDetail/ALDRICH/434981
http://www.sigmaaldrich.com/catalog/search/SpecificationSheetPage/ALDRICH/434981

Online specification sheet for Natrosol 250MR from Hercules Aqualon
http://www.herc.com/aqualon/product_data/nat_hec_bro_grades.html

I declare that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code and may jeopardize the validity of the application or any patent issuing thereon.

Dated: August 9TH, 2007 By: Andrew Philip Pal

Title: RESEARCH SCIENTIST.